

Technical Bulletin #87:

Integrated Pest Management – Management of Cucurbit Pests

General pest control measures are listed below:

1. Remove any alternate host of pests on the surroundings of your crops before planting. Destroying cucurbit weeds will prevent reproduction of pests such as the melon worm, and the melon fruit fly, and diseases such as downy mildew, powdery mildew, gummy stem blight, and bacteria.
2. Use live barriers around your crop to prevent the direct entry of virus vectors, like aphids and white flies, to maintain natural enemies and to selectively kill armyworms that are attracted to the barriers.
3. Use botanical pesticides whenever necessary.
4. Promote the maintenance of ladybugs and other natural enemies by maintaining plant diversity and flowering plants in home gardens and commercial fields.
5. Rotate botanical pesticides with detergent (3 grams per liter) plus vegetable oil (1 ml per liter) to maintain aphid, spider mite, thrip and whitefly populations low.

Cucurbit pests that may be important:

Aphids: Aphids are pear shaped, soft bodied, small in size and have two small horns at the end of the abdomen. They are sucking insects, vectors of non-persistent viruses.



1. Use yellow sticky traps to detect incoming aphids from the surroundings two to three weeks before planting.
2. Kill aphids using a detergent and vegetable oil solution before destroying old crops to avoid winged virus infected aphids from getting to nearby crops.
3. Destroy early infected virotic plants to avoid aphids from being infected and spreading the disease within the crop. If aphids are present on infected plants spray the plants before destroying them.
4. Use systemic pesticides in rotation with botanical pesticides and with detergent and vegetable oil in commercial crops whenever necessary. Use the drip irrigation system to apply the systemic insecticide to prevent the killing of natural enemies and pollinators.

Melon Worm and Armyworms: The melon worm is green in color and has 2 white stripes on its back. It likes to feed on growing tips and fruit. The butterfly has white wings with brown borders and is more active at night. Armyworms are not specific pests to cucurbits, but may attack many other crops and weeds. The adults are nocturnal moths, light brown in color, dull and unattractive, and lay eggs in masses. Larvae are voracious, and vary in color and size depending on the species.



Melon Worm on cucurbit
alternate host



Melon Worm larva and its
damage on cucumber



Armyworm adult
moth

1. Hand pick and kill armyworm egg masses, melon and armyworms and melon worm pupae in home gardens. If the worms are parasitized, do not destroy them but leave them in the field.
2. Use *Bacillus thuringiensis* insecticides to kill worms without affecting pollinators or beneficial insects.



Armyworm on broad
leaf weed



Armyworm in Yard long
bean



Parasitized
melon worm

Thrips: Thrips are small, elongated insects, yellowish when young, and light brown when adult. They are commonly found inside flowers and on the underside of the leaves.

1. Use yellow sticky traps.
2. Apply ashes or limestone on plastic mulch or on the surface of the naked soil to kill any pupating thrips that drop to the ground.
3. Maintain sunflower plants near thrip affected crops to allow the minute pirate bug, an efficient thrip predator, to establish and reproduce through time.



Damage in cucumber growing tips caused by thrips



Young thrips



Adult tThrip

Spider and Broad Mites: Spider mites are normally red in color, and look like small ticks. Broad mites are whitish and smaller than spider mites. Broad mites normally occur on the underside of leaves.

1. Avoid dusty roads near crops. Plant live barriers and if possible water dusty roads several times a day to prevent dust in crops. Dust helps transport spider mites and protects them from predators.



Spider mites



Broad mites

White Flies: White flies are tiny white insects, triangular in shape, soft bodied and with wings that look like a two sided roof. They are sucking insects that may be vectors of persistent viruses, especially in watermelons. In other cucurbit crops they may be unimportant.

1. Use yellow sticky traps.
2. Maintain crop surroundings free of broad leaf weeds at all times because these plants allow the reproduction of white flies and may maintain white fly transmitted viruses as well.



Adult White Flies on a cucumber leaf

Melon Fruit Flies: Melon fruit flies have a strong built body. They are light brown in color and females have a pointed abdomen.

1. Use sex pheromones to prevent mating and reproduction.

2. Cover bitter melon fruit with paper bags or other local material envelopes to prevent female fruit flies from ovi-positing and damaging fruits.
3. Collect and destroy all fruit fly infected fruit to prevent new adults from emerging.



Fruit Fly larvae



Adult Fruit Fly



Fruit Fly damage in bitter melon



Bitter melon fruit
protected by clothing bag



Fruit fly sex pheromones



Fruit fly
pheromones trap

Even though leaf miners are relatively common in cucurbit crops, they are not listed as pests in this bulletin because they normally do not cause economic damage, except in conditions where pesticide abuse is common. In nature, leaf miners are controlled by natural enemies and normally do not require human intervention.

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